

TEE-ONE TOPICS

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MOVING IT

For the record I grew up in Tasmania a small island about twice the size of Switzerland to the South of the Eastern end of Australia. Given the latitude it was cold, but not, I keep thinking as cold as Canberra our national capital some 2000' above sea level. My father bought a brand new Chevrolet Fleetmaster all of £845 in 1948 when a Mark VI Bentley was £4200! The one thing that the Bentley had I remember was a heater. In 1950 this was quite an innovation. When we would go for a drive in Winter it was mandatory to take car rugs to cover our knees and feet and if you were driving, trying not to get your feet tangled in the rug.

Heaters appeared in American cars in that country in the 1920's as foot warmers heated by exhaust gas. Apart from the possibility of asphyxiation through leaking accessories there was probably the added danger of serious burns given the heat of exhaust. Smiths of England apparently pioneered car heaters, using hot engine coolant, in the UK immediately after the Second World War. They were known in the patent protection industry as air movement devices.

So years later in this scene the 1970's Smith's are still at it supplying the Factory with air movement devices which are well made quiet and reliable. The above motor incidentally was used in the underfloor circuit of the S series cars and in the blower arrangement mounted under the front mudguard.



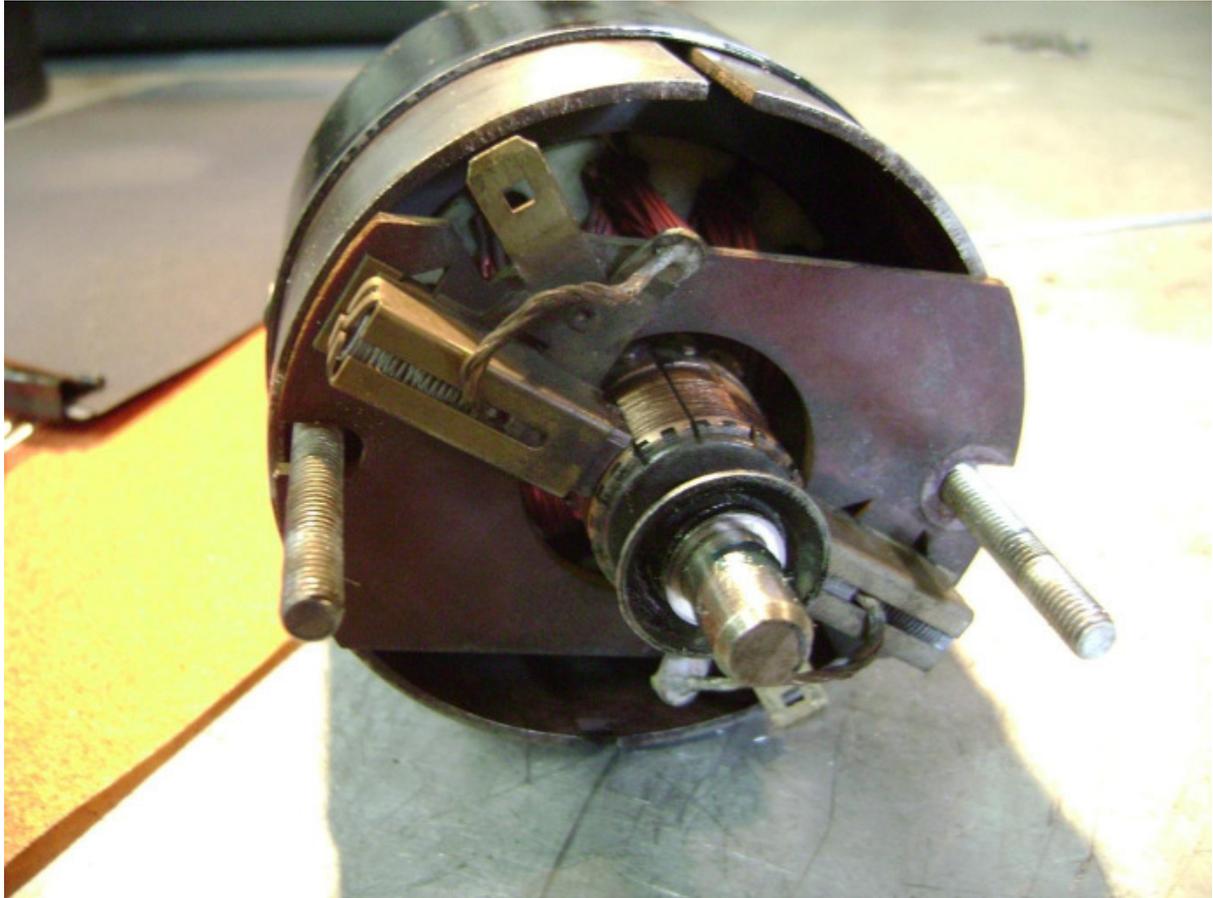
The squirrel cage fan or air mover was first used on the Silver Shadow which like its predecessor had two systems loosely described as air conditioning. As mentioned in the last



edition the motors were suspended from a panel by rubber mounts to minimise noise transmission hence the significant earth wire seen here. At left is the armature and drive shaft, the fan being mounted on the output shaft at right. It should be noted that it is bad practice to remove the armature from

the permanent magnets fitted to the casing as the armature acts as a 'keeper' for the magnets. Get them out, clean them and get them back smartly.

The more keen eyed among you will note the striations on the shaft to the right of the armature windings. This is where the shaft is 'picking up' the sintered bronze bushing due to lack of lubrication. There is no practical way to lubricate this area without removing and dismantling the motor.



And here is the other end of the armature complete with brushes and the end of the shaft that again runs in a sintered bronze bearing. Note the terminals at 11.00 o'clock and 4.00 o'clock. These are ordinary push on connections which should not be reversed otherwise the motor spin will be reversed and you may be sucked out of the car!! Some enterprising gentlemen drill a small hole in the motor casing to lubricate the rear bearing but this does not help the front bearing where the load is greatest by virtue of the weight of the fan. Note the brush assembly is mounted on a separate board which lifts off as an assembly.

Apart from the dry bearings it is seldom the armature fails and even then a competent



technician can rewind them.

Removing the blower on the earlier Shadows is not difficult particularly on the right hand side shown here. On the other side you have to work around the hydraulic reservoir and remove the wiper motor.

In the picture at left at the right bottom can be seen the 'toeboard' loom plugs. These save threading large looms through holes in the firewall but if corrosion gets in there they can lead you a merry

dance.



OIL PRESSURE SENDERS

If you have been having problems with the Factory supplied unit at left, try the item at right from RA Chapman in Melbourne. A certain Phantom VI had enjoyed 5 of the former all of which have leaked. The one on the right has been running for nearly six months, it does not leak and gives a perfect reading!



A RARE SIGHT

An appreciation of archaeology is very handy in working on these cars. This is a security seal found on the left hand front wheel bearing nut on a 1972 Corniche. The Factory was a bit vague about when the front wheel bearings should be serviced suggesting they could be attended to at general overhauls of the chassis! In the good old days this would have been say 100,000 miles. For many of our cars however that is forever in time. The grease does not seem to deteriorate apart from drying out. Unfortunately I am somewhat conditioned by the memory of a Holden Torana rounding a corner and the front wheel coming off complete

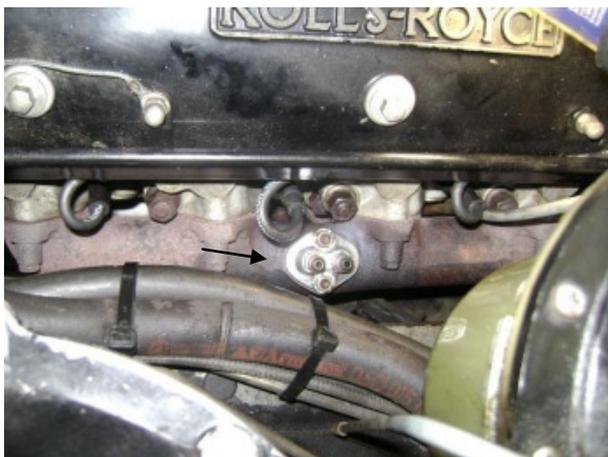


with its brake rotor and calliper, stub axle nut and both bearings. It had apparently seized! To get at the bearings requires removal of the callipers – not a difficult job just an investment of time!



GETTING THAT CHOKE HOT

I still meet up with owners who having worked out that the automatic choke on their vee eight engine is motivated by heat from one of the exhaust manifolds but actually think that the engine sucks exhaust gas into the carburettor. ‘It helps keep the pollution down one adamant driver informed me. Well here is the answer – a simple heat exchanger.



Normally buried in the manifold this ‘U’ tube cops the full blast of the exhaust as it emerges from the valves immediately above it. The air intake sucks air from wherever it can which includes the stove pipes from the induction assembly. These pipes connect to the ‘U’ tube which, when the boot is being applied with vigour, they must glow red! The air passing through gets very very hot and heats up the thermocoils on the side of the choke assembly and the choke opens. At left, the location on an early SZ.

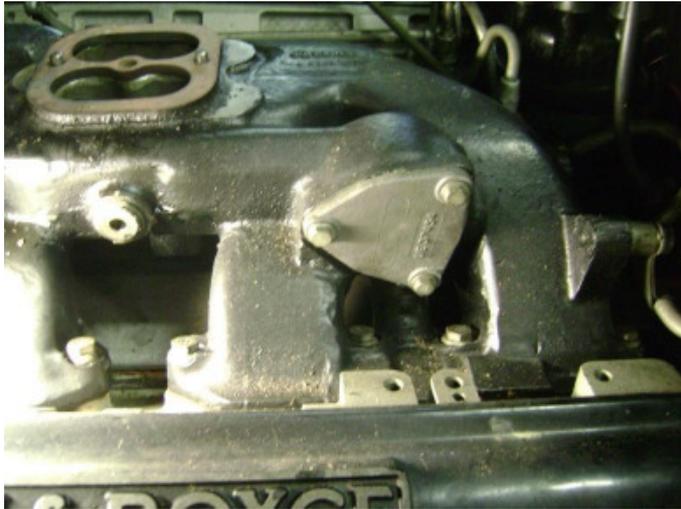
The exhaust manifolds as we all know are normally out of sight, lodged as they are under the ‘vee’ of the cylinder block. There are, you may be surprised to know quite a few variants dictated by other components including sub frames turbo chargers and accumulators to name a few. The above ‘U’ tube is central in the manifold as is the outlet on the manifold so it can poke straight down the hole daddy! If the exit pipe curves or is off centre the ‘U’ tube is suitably bent to fit. Whenever one is screwing these bits and pieces together always use plenty of anti-seize grease, if for no other reason to avoid blasphemy being heaped on your good name by the poor sod tasked later with removing the assembly. ✂

YESTERYEAR



Wooden spoke wheels were used on the earliest of cars including Rolls-Royces. One problem was shrinkage which caused them to creak. It was

the chauffeur's job when he could find an opportunity to toss a bucket of water over them to swell the wood.



CURIOSITY

Even the most incurious owner must surely have noticed this odd triangular plate carefully bolted to the intake manifold of their vee eight engine. There is nothing behind it just a hole. As best I can guess is that it was a provision to heat thermocoils for the carburettor choke. American designers used hot water from the cooling system for the purpose. The Solex 4-A-1 carburettor used on Corniches in their later years may

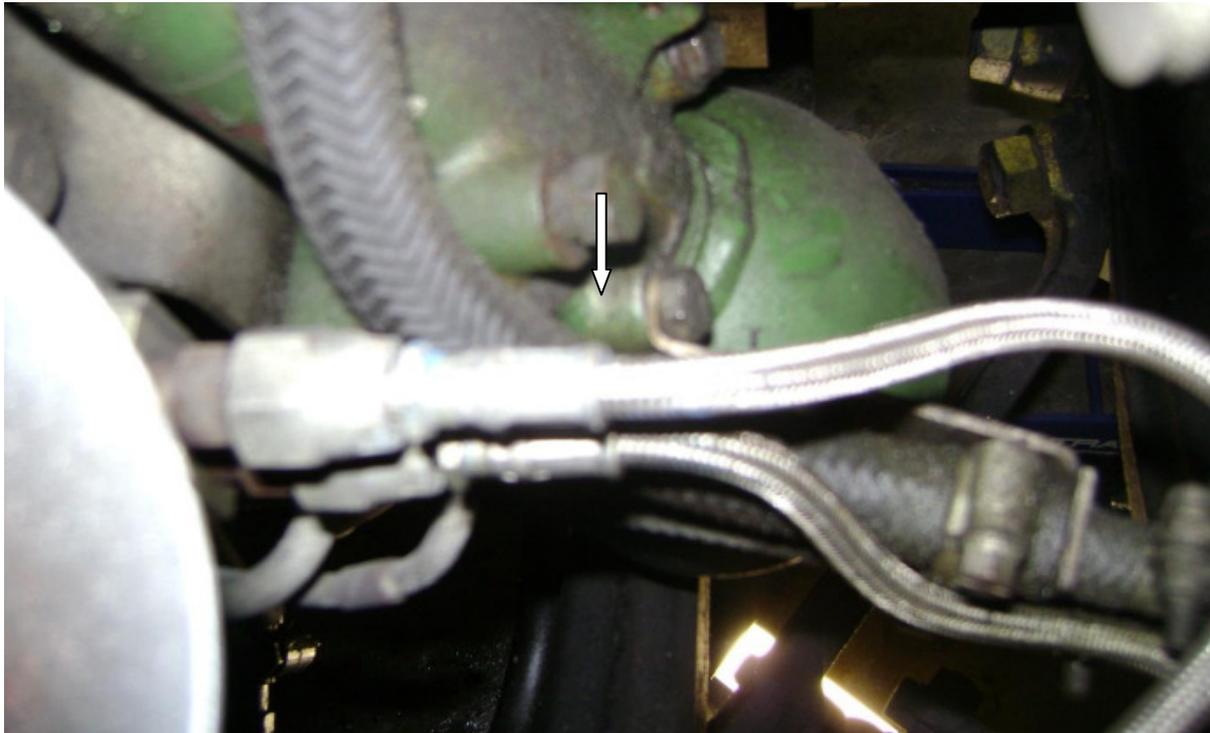
have been a candidate for this arrangement although in production electrically heated coils did the job.



THE CROWSFOOT SPANNER

This is a very old tool that many would be mechanics are unaware of. They come in imperial and metric sizes and fit standard spanner accessories. For screwing nuts and nipples such as

the above they are worth their weight in gold. They are not expensive and if you need one for one job, get a set you will never regret it.



MINERAL OIL ACCUMULATOR BLEED VALVES.

As you gain confidence with your SZ car one of the earliest jobs will be to replace the sealing rings on the hydraulic pumps – a task that is covered elsewhere. The accumulators for these cars unlike the earlier Shadow are sealed precharged units and simply screw into their regulator valves. For those that have struggled with the earlier Shadow units trying to get bleed hoses on the nipples then trying to loosen the nipple without the hose falling off, the new arrangement shown here is a dream.

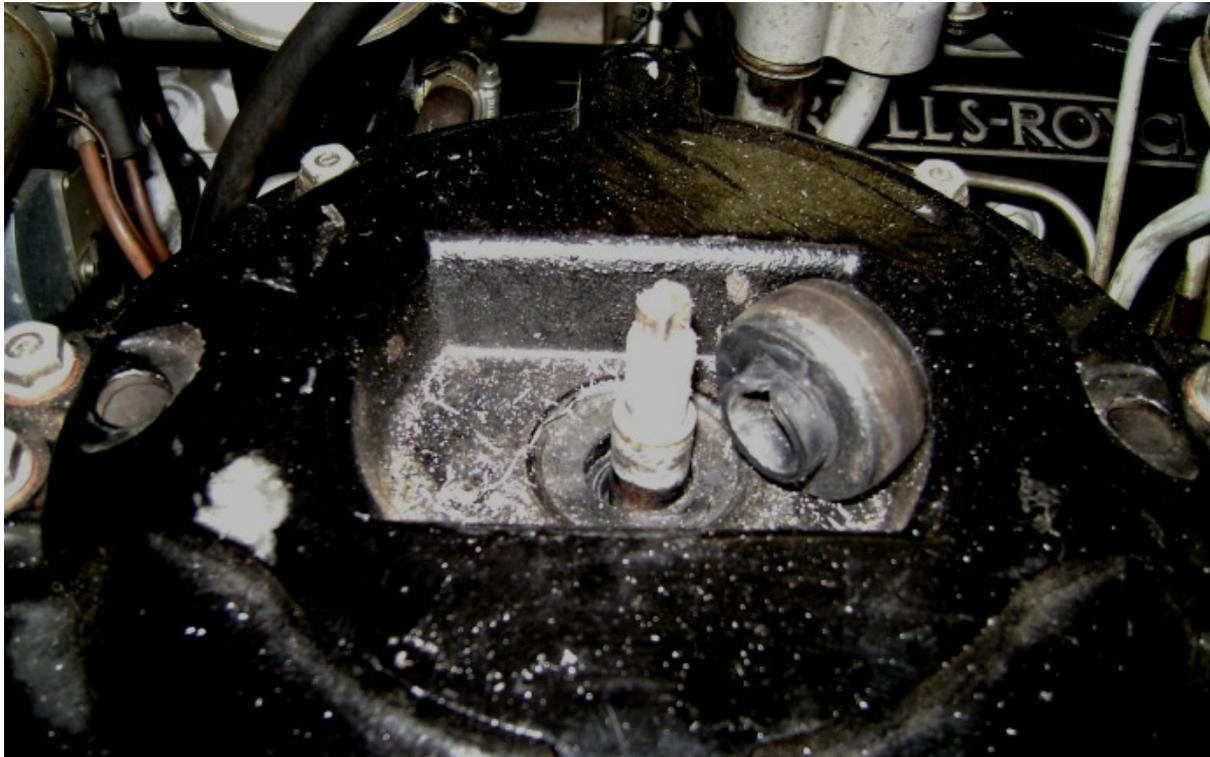
Rather than drain hydraulic fluid, with the mineral oil system one simply loosens the bleed screw seen here arrowed. The oil is then pumped through the accumulator sphere and back to the reservoir where it can release any air. Of course you tighten them up again when you have finished if you feel you need brakes!!!



SOMETHING TO BE NERVOUS ABOUT.

This oil saturated mount for the rear of the sub frame under the hydraulic reservoirs does not use the legendary 'pot

scrubber' bushes, instead uses rubber. Mineral oil seeping down from over filled or leaking reservoirs on Silver Spirits just loves rubber for breakfast and very quickly the body is resting on the sub frame itself!



WOBBLING SHOCKER KNOBS

That seemed like a good heading to catch the eye! The top of the shock absorbers on post55 cars are held in place by the large 'saucepan lid' so prominent in any engine bay. To insulate the shaft of the unit from the car there are two rubber grommets, one below and one above. These are sandwiched between two stout special washers standard on most cars for this purpose. To hold the two washers apart so that they do not get crushed out of existence there is a spacer tube seen here poking through the 'lid'. The top rubber bush seen here lying on its side has a projection in the mould which is forced partially down the lid's hole and is all there is to stop to the spacer banging the sides of the hole.

Since this is all there is to stabilise the top of the shock absorber, the little flange of rubber has a fair amount of work to do. Eventually it will wear through and then the spacer tube can eat out the hole in the lid until it becomes out of round. It is so simple to undo the nut and lock nut on the top of the shock absorber, lift off the retaining washer then the bush and see how life is progressing down there. If the above sight is what greets you get another bush.

One other trick that Richard Treacy worked out when you have aging rubber bushes is to fit a thick fibre washer over the top of the top bush and under the washer to clear the spacer and then apply the retaining washer. Tightening the whole thing down will put just that added bit of tension on the assembly and avoid damage until you work out how to pull the whole lot to pieces.





THROTTLING THE PROBLEM

The round silver object seen below the hydraulic reservoir is all that remains of the suction throttling valve on a '72 Shadow. To achieve refrigeration one needs to compress appropriate gases preferably until they become liquid then let the liquid evaporate. The gas having given up heat to be compressed to a liquid has to take in heat to return to a gas. This could be done with air but it would take a great deal of energy and be singularly inefficient. The gas is always released in a heat exchanger much like a small radiator core. The liquid turning to gas makes the core very cold and the air passing over it is chilled and incidentally dehumidified since the water vapour condenses on the core.

If too much gas is released too quickly the whole core freezes and no air can get through so there is no cooling. To prevent this nowadays the rate of gas release is controlled by a valve which in turn is controlled by the temperature of the core. In the past the temperature was controlled by the driver. The air conditioning controls you will recall require pulling for the quantity of air and turning for temperature. The latter for cooling controlled a device called a suction throttling valve where turning the control energised one of the servos to actually open or close the valve controlling the gas release.

These devices were not successful and in any case spares are no longer available. KSL Air Conditioning in Sydney specialises in the systems and the picture shows one of their conversions. I remember asking specialist years ago about the gradations of temperature with this conversion to which he replied there were two settings, 'cold' and 'bloody cold'. The tempting knob in the picture which screams 'fiddle with me' is the adjustment for the gas release. Leave this to your air con man to fiddle with!

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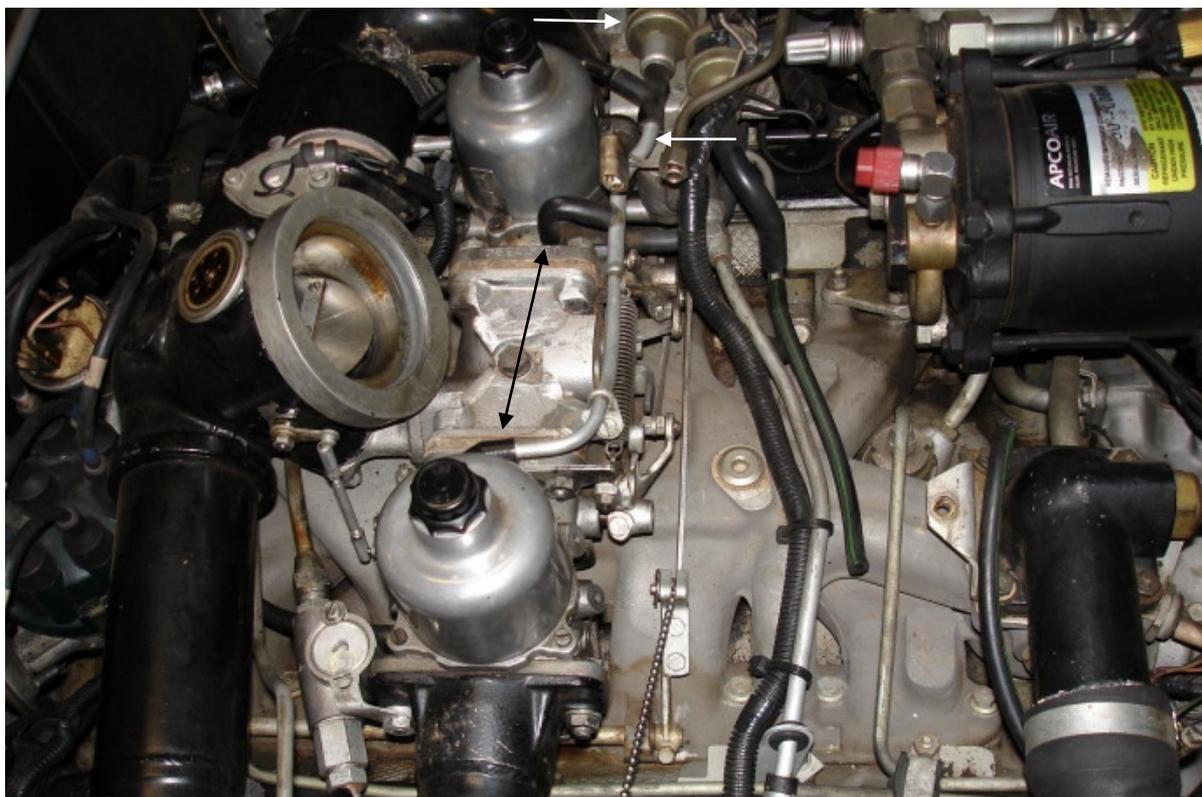


WHEN YOUR ANTI-DIESELING VALVE DOESN'T

We are talking about the thing on the right with a couple of wires coming out of it and rubber pipes either end. The car can be a Shadow II or certainly a Spirit as long as it has carburetors. Rudolph Diesel invented an engine that ran without spark plugs but with quite a few advantages over a petrol driven motor. The only drawback for many people is the noise of the things. They are incidentally the most efficient mechanism for producing energy from fuel both internal and external combustion!

So we have that tell tale knock of the diesel engine but owners seem to live with it. Petrol engines however operate in much the same manner since both use the Otto cycle. When you want a diesel engine to stop you simply turn off the fuel. With a petrol engine this is generally not practical so even though you turn off the ignition which shuts down the spark plugs the fuel is still sucked in as long as the pistons are going up and down. All engines have some bits of carbon in the combustion chambers from burning fuel. This carbon in a working engine frequently glows red hot, so even turning the engine off, if fuel is sucked in, the glowing carbon will as likely ignite it. Unfortunately there is obviously no order to the firing and cylinders fire as they please causing the most horrendous knocks and even running the engine backwards!

If this happens to your older car the best approach is to turn the ignition back on and let the engine idle for a little while then switch off. Dieseling will often occur if you turn the engine off when it is running at a fast idle or faster.



And here it is all laid out for you. The solenoid valve is arrowed at the top, the vacuum pipe emerges next also arrowed and finally to connections to the float chambers also arrowed. The angled rubber connections are the ones you can prise off to immediately overcome the starting problem.



For cars fitted with an anti-dieseling valve life is simpler. When the ignition on these cars is on, the valve is shut. Immediately it is turned off the valve opens admitting vacuum from the intake manifold to a pipe connected to each of the float chambers. The temporary vacuum stops the fuel from leaving the chamber so the engine stops.

At left is an original valve. Judging by the Walt Disney blue connection there has been trouble here before. The valve was removed hosed out with perchlorethylene (marketed as Brake Cleaner) and given a light coat of WD40 to lubricate the mechanism. It lasted until the car sat for a week waiting for parts and could not then be started until the vacuum line was disconnected. Clearly the valve had stuck open. The lower valve is used by Jaguar and can easily be modified to do the job. Incentive is that the genuine valve made by Tecalemit is \$470, the Jaguar one made by Tecalemit is \$123! The choice is yours. The Jaguar part number CAC3939 and is described as a Fuel Return Solenoid.

Like everything it is one more gadget to go wrong and occasionally they do. The most common problem is the valve sticking open. You go to start the engine which it does beautifully but the moment it gets a few revs up the generated vacuum in the intake manifold whips through the valve sucks the air out of the float chambers stops the petrol flow and the engine stops. All this happens in the space of a



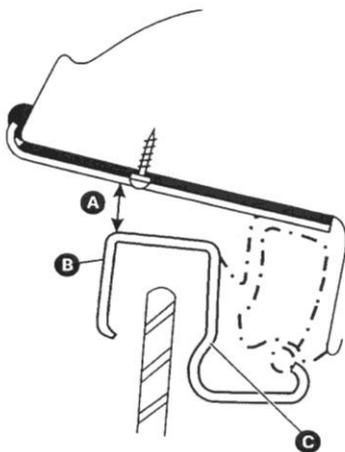
The finished installation waiting the fitting of the vacuum pipe

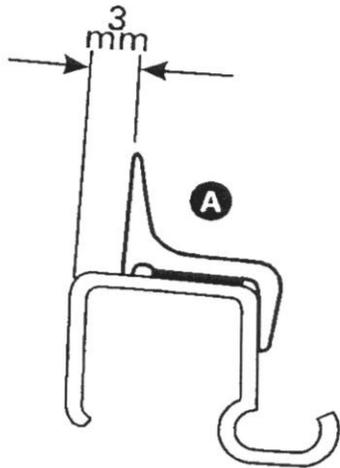
couple of seconds. You try again and again no luck. Rather than go down the bucket of petrol and a match of two there is a very simple solution to get you home! You simply disconnect the vacuum hoses from the carburettors!



SECONDARY DOOR SEALS

About 1995 the Factory finally realised that all the SY and SZ cars at speed had quite remarkable wind noise which no amount of fiddling with the primary rubber moulded seals would cure. Their solution was to devise some secondary seals that glued themselves to the top outer edge of the stainless steel window frame. The cost at the time of writing was about \$150 per door and with care the do-it-yourselfer can install them. Before rushing out and getting a set however it should be noted that while these will fit any post war car with the stainless steel window frame, it is essential that the frame to body gap, 'A' in the diagram at left, has to be within the dimensions of 5 – 10mm. If you try to fit the seals when the gaps are marginally correct you will have difficulty shutting the doors and perhaps even opening them.





At left is a cross section of the seal when fitted. I am not aware of any success at fitting these seals to post55 cars, little success seems to be with Shadow I's (sic) but Shadow II's – a lot of them meet the requirement.

The instructions from which I pinched these diagrams suggested that some cars where the dimensions are insufficient, the window frame can be moved to suit.



Clearly on this '87 Spirit marooned in my garage there is enough room for the seal



This gap in a '72 Shadow completely rules out the new seals



Despair not, if the expensive seals won't fit try these draft strips which R A Chapman can supply complete with built in adhesive. This is a trial fit on the driver's door which took a whole 20 minutes. The door now requires a little more slam but there is certainly a much better seal. If the slam becomes a problem we can ease off the striker plate on the 'C' pillar.

